IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Floyd Backes Application No.: 10/780,798 Filed: 2/18/2004 Title: Distributed Protocol for Use in a Wireless Network Attorney Docket No.: 160-041	Group Art Unit: 2617 Examiner: Holliday

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APPEAL BRIEF

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I. Real Party in Interest

The real party in interest is Autocell Laboratories, Inc.

II. Related Appeals and Interferences

Appellants are not aware of any related appeals or interferences.

III. Status of the Claims

Claims 1-3 are pending in this application. Claims 1-2 are rejected and claim 3 is cancelled. This is an appeal of the decision by the Examiner dated December 31, 2008, finally rejecting claims 1-2. None of the claims have been allowed. The rejection of claim 1 is the subject of this appeal.

IV. Status of Amendments

All submitted amendments have been entered and considered.

V. Summary of Claimed Subject Matter

The subject matter of claims 1-2 is a radio control protocol for use by devices in a wireless communications environment wherein multiple channels are available for communication. The protocol includes channel claim messages, presence announce messages, and bid and accept messages for executing an association auction. The limitations recited in claim 1 are supported by the specification and drawing as indicated in bold below.

1. (previously presented) A radio control protocol for use by devices in a wireless communications environment wherein multiple channels are available for communication, comprising:

transmission of channel claim messages by ones of a plurality of fixed location wireless devices operable to provide network access, each channel claim message being indicative of an intent to utilize a channel for communications with associated mobile wireless terminal devices at some subsequent point in time, wherein each fixed location device uses the claim messages it sends and receives to select a channel on which to communicate;

The AP 12 then advertises its intention to use the selected channel by periodically transmitting DRCP Claim messages during the claiming period (step 42). Claim messages are transmitted at full power. During this claiming period, the AP 12 receives all Beacons, DRCP Claim messages, and DRCP Announce messages transmitted on the currently chosen channel (step 44) and uses the information contained therein to build an "Other APs" table 46 (Fig. 6, Fig. 5 step 48). For each Beacon it receives, the AP 12 notes the AP-ID and the received power level in the Other APs table 46. For each Claim or Announce message it receives, the AP 12 notes the AP-ID of the AP that sent the message, the received power level, and the transmit power backoff (TP backoff) in the Other APs table 46. The TP Backoff value indicates how far from maximum power the sending AP's radio has been turned down, and will be explained in more detail in the AP Power Adjustment section. The AP 12 also marks the entry for that AP-ID as being DRCP capable. A

normalized received power value is calculated by adding the TP Backoff value to the received power value. The normalized received power value equalizes the AP power levels for comparison purposes. When the AP 12 receives a Beacon or DRCP message from an AP for which it already has an entry, it updates the entry and stores the received power and TP_backoff values as a list. Page 19, line 11 through page 20, line 6.

transmission of presence announce messages by the fixed location devices, the announce messages being indicative of presence of the transmitting device, magnitude of intentional transmitter power attenuation by the transmitting device, and protocol capability of the transmitting device; and

Once an AP is running on a channel, it continuously performs the following functions to optimize its configuration in the wireless LAN: Radio Power Adjustment. Each DRCP-enabled AP adjusts its power as appropriate, to accommodate the nearest AP operating on its channel while maintaining its connection to its farthest associated STA. The AP conveys a TP_backoff parameter in its Announce messages. The TP_backoff value provides an indication of how far the sending AP has turned its transmit radio down. This TP_backoff value is used by other APs to determine their own TP_backoff values. A STA that is associated to the AP can then adopt the communicated TP backoff value to adjust its radio power, and can track this value as it changes. Page 28, line 23 through page 29, line 4. DRCP messages are addressed either to a Group MAC Address, or to an individual MAC address, and are distinguished by the presence of the DRCP Protocol

Identifier in the Protocol Identification Field of a SNAP PDU. Page 61, lines 7-10.

an association auction including:

transmission of an association bid message from a mobile wireless terminal device to a particular fixed location device, the bid message being a request to communicate in the wireless communications environment via the particular fixed location device, and wherein a decision to send a bid message is based at least in-part on an indication that the receiving device is capable of providing better service as a function of magnitude of intentional transmitter power attenuation by the particular fixed location device; and

The purpose of the Auction is to accomplish the distribution of STAs 16 across APs 12 in a manner that optimizes wireless communications performance. The goal is to have STAs 16 associate to their nearest AP 12 while taking loading (the sum of the individual loads of the STAs 16 already associated to the AP 12) into account. This allows the RF footprints of the APs 12 and STAs 16 to be minimized, while ensuring that no AP 12 is overloaded. STAs 16 learn of available APs 12 through the Announce messages transmitted by the APs 12. As will be further described with regard to STA optimization, a STA 16 calculates a "biased distance" to each AP 12 it hears from, including its own AP, using the received power and loading information from the Announce messages. A STA 16 will send a Bid message to an AP

that is "better" than the STA's current AP, where better means that the AP has a lower biased distance. The Bid message contains the value of the difference between the biased distance from the STA 16 to the destination AP 12 and the biased distance to the STA 16's current AP. This value is called the biased distance delta. In particular, referring to Figure 21, the AP 12 collects any received Bids over a period of Auction Interval (steps 340,342). If a Bid is received from a STA 16 from which a Bid has already been received (step 344), the new bid information replaces the previous bid information (step 346). Otherwise a new entry is created for the STA 16 (step 348). In either case the bid entry's age is reset (step 350). Page 41, line 5 through page 42, line 3.

transmission of an accept message by the particular fixed location device in response to the bid message, the accept message indicating that the particular fixed location device will allow the wireless terminal device which transmitted the bid message to communicate in the wireless communications environment via the particular fixed location device, and wherein the particular fixed location device does not send an accept message to the wireless terminal device which transmitted the bid message if the particular fixed location device determines to not accept the request to associate.

At the end of Auction Interval (step 352), the AP 12 processes the received bid information. (The Auction Interval in an exemplary

802.11 environment may be on the order of, for example, 7.5 seconds.) The age of all bid entries is incremented by one (step 354) and then any bid entry whose age is greater than Max Bid Age is deleted (step 356). The list is then sorted by biased_distance_delta value (step 358). The AP 12 selects the bid entries with the highest biased distance delta values, up to acceptsPerAuction entries, and sends a DRCP Accept message to each of the STAs 16 corresponding to those entries (step 360). The IDs of each STA 16 being sent an Accept is put in a list of outstanding accepts (step 362), and a count of accepted STAs who have not yet associated and registered is noted as numAcceptsOut (step 364). At this point the next auction period begins. Page 42, lines 4-14.

VI. Grounds of Rejection to be Reviewed on Appeal

A. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Kallio (US 2004/0014422 A1) in view of Nakamura (US 6,157,626) in view of Labonte (US 6,259,918) in view of Feder (US 6,522,881 B1).

VII. Argument

A. The cited combination of references fails to disclose or suggest "transmission of an association bid message from a mobile wireless terminal device to a particular fixed location device, the bid message being a request to communicate in the wireless communications environment via the particular fixed location device, and wherein a decision to send a bid message is based at least in-part on an indication that the receiving device is capable of providing better service as a function of magnitude of intentional transmitter power attenuation by the particular fixed location device" as recited in claim 1.

Three basic criteria must be met in order to establish a *prima facie* case of obviousness. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Third, the prior art references must teach or suggest all the claim limitations. (MPEP §2143) "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). The cited combination of references fails to disclose or suggest the claimed limitation of "transmission of an association bid message from a mobile wireless terminal device to a particular fixed location device, the bid message

being a request to communicate in the wireless communications environment via the particular fixed location device, and wherein a decision to send a bid message is based at least in-part on an indication that the receiving device is capable of providing better service as a function of magnitude of intentional transmitter power attenuation by the particular fixed location device."

"Handover" or "handoff" is the process by which a mobile wireless device changes from being associated with a first fixed-location device to a second fixed-location device. Typically, an association is "sticky" in the sense that the mobile device remains associated with the same fixed-location device until communication is broken or substantially degraded, at which point the mobile device selects another fixed-location device with which to become associated. The selection is typically based on received signal strength, and is not a request by the mobile device, but rather an instruction. There are various shortcomings to such handoff procedures, including but not limited to lack of load balancing, interruption of communication, variation of data rate, and lack of accommodation of automated power control for interference mitigation.

The Examiner argues that a "bid message" is taught by combining the handover notification described by Kallio at paragraphs 0134, 0135 and figures 8 and 10 with the "perch channel" described by Nakamura at column 4, lines 63-65 and signal strength measurements described by Labonte. The analogy fails in at least two fundamental respects.

The first respect in which the Examiner's analogy fails is that Kallio and Nakamura both fail to describe any type of bid message. A "bid" is simply an

offer or request, i.e., it can be accepted or denied. Note that claim 1 recites "wherein the particular fixed location device does not send an accept message to the wireless terminal device which transmitted the bid message **if the particular fixed location device determines to not accept the request to associate**." (emphasis added) As shown in step 802 (figure 8) of Kallio, the mobile station does not request association but rather issues a "notification." Kallio never describes the access point as being able to reject the notification. Hence, Kallio fails to describe a "bid message" of any kind. Nakamura states that cell judgment unit 38 judges a cell of a base station and "notifies the read out perch channel spread code identification number to the control unit 35 as a judgment result,"[1] following which "the control unit 35 then carries out the subsequent control based on the cell judgment result by regarding a cell of a base station which transmitted the perch channel corresponding to the notified perch channel spread code identification number as the located cell."[2] Because the control unit carries out subsequent control based on the cell judgment result by regarding the cell as the located cell, it is clear that this is not a bid message. In particular, the cell selection decision made by Nakamura's mobile device is not merely a request, but a command. In contrast, a bid message is merely a request to become associated with a fixed-location device.[3] Such a request is not automatically granted, but is subjected to a selection process.[4] It should be noted that the use of a bid rather

[1] Column 5, lines 62-67
[2] Column 6, lines 1-5
[3] As defined at page 44, lines 15-19, "the STA receives and processes DRCP Announcements from all APs that are operating within its range on any of its supported channels. It evaluates the received power and loading information from the Announce messages and if it finds an AP to which it would be more optimally associated than its current AP, the STA **makes a bid to move** to that AP." (emphasis added)
[4] Page 42, lines 9-14

than a command is desirable because the bid/selection auction helps dampen excessive migration of mobile wireless devices between fixed-location devices, e.g., for purposes of load balancing. In view of the above, it will be appreciated that Kallio and Nakamura fail to disclose transmission of a bid message from a mobile wireless device to a fixed-location device where the fixed-location device is calculated to be capable of providing best service.

The second respect in which the Examiner's analogy fails is that Labonte fails to account for power attenuation for interference mitigation in the manner recited in claim 1. Generally, transmission power is attenuated in two different ways: *over-the-air* and *by the transmitter*. *Over-the-air* attenuation of transmission power includes attenuation as a function of distance from the transmitter. *Over-the-air* transmission attenuation also includes attenuation by obstacles between the transmitter and receiver. Short of moving the transmitter and receiver closer together and removing obstacles, *over-the-air* transmission power attenuation is a natural condition that cannot be changed and is not an intentional action taken to accomplish any network management goal. Intentional transmission power attenuation *by the transmitter* is used to reduce RF footprint and thereby decrease the chance of interference with other devices. In other words, the amount of electrical energy that a wireless device puts into a transmitter to cause a signal to be transmitted can be intentionally reduced in order to transmit a weaker signal, i.e., before the signal ever reaches the air. However, intentional transmission power attenuation *by the transmitter* complicates evaluation of fixed-location wireless devices. In a wireless

environment where a fixed-location device reduces its own transmit power in order to reduce RF footprint, it is difficult for a mobile device to evaluate that fixed-location device for purposes of association. When that fixed-location device is operating at full power the mobile device can generally evaluate the fixed-location device based on received signal strength and other factors, as has been done in the art for some time. However, when the fixed-location device is operating at a lowered transmit power, it will appear to be a poor candidate for association because of that lowered signal strength.[5] This is a problem because that fixed-location device may actually be a very good candidate based on ability to operate at higher power, e.g., since the fixed-location device is only powered-down because no mobile devices currently require higher transmission power from the fixed-location device. It would therefore be useful for mobile devices to be able to quickly and efficiently determine whether a fixed-location device can increase power, and by how much.

As described in the background of Labonte, base stations use multiple directional antennas which enable extended coverage range. However, as stated at column 2, lines 30-33, such antennas create a problem because they disturb the location of the border between cells. Since handoffs generally occur in the vicinity of the cell border, the purpose of Labonte is to "more precisely locate the mobile station and uniformly, predictably and accurately identify when it is appropriate to authorize handoff." (Abstract) As described generally at column 7, line 15 through column 8, line 12, and more specifically at 36-50, the signal strength measurements made by the mobile station must be adjusted to

[5] Note that attenuation of transmit power by the access point is NOT the path loss.

compensate for the operational and physical differences between the sector and smart antennas. In other words, given multiple different received signal strength measurements from a base station, Labonte describes a technique for combining those measurements to obtain one received signal strength measurement from which the location of the mobile station relative to the border can be calculated. However, it is still received signal strength rather than attenuation by the transmitter that is used, and Labonte fails to disclose any means for evaluating whether a base station could increase power to provide a stronger signal. The Examiner cites the power backoff values at column 3, lines 10-30 as being equivalent to accounting for intentional power backoff by a base station. However, as described at column 4, lines 52-58, what Labonte actually does is account for differences in antenna/channel combinations. In particular, "the [Labonte] backoff identifies whether the power level of the control channel differs from the power level of the traffic channel in each cell," which is reasonable when trying to evaluate a base station that is using multiple antennas and multiple channels, but has nothing to do with determining whether a base station could increase power on one channel to provide a better signal if the mobile station were to associate with that base station. In sum, although some similar terminology is used, both the problem and the solution differ between Labonte and the claimed invention.

In the "Response to Arguments" at page 2 of the Final Office Action the Examiner states that "when the [Kallio] mobile terminal receives a page from an access point it responds with its information, reading on the bid message." Kallio

never describes the "information" as a request to associate directed to a specific access point. Indeed, the implication is that the mobile terminal will send its "information" to any access point that sends a page because Kallio describes a centralized control architecture in which the wireless devices are slaves to a server, whereas the recited invention is a distributed architecture where the mobile station decides which access point to bid, and the access point decides which mobile station bid to accept. Further, as already discussed above, Kallio describes an "instruction" rather than a bid/request. Therefore, Kallio neither bids for an association or any other service.

In the "Response to Arguments" at page 3 of the Final Office Action the Examiner states that "Labonte teaches that the downlink signal strength measurement on the serving cell's traffic channel is adjusted by accounting for power control attenuation and the signal strength measurement on a neighbor cells' channel is adjusted by an output power backoff (power attenuation), wherein each cell (serving and neighbor) is characterized by its power backoffs." The Examiner has mischaracterized the reference by disregarding the context as described in other parts of the reference cited by Appellant. Further, the Examiner's response disregards the distinction between over-the-air attenuation and power backoff by a transmitting device. Even if the Examiner's mischaracterization of the reference were considered to be accurate for the sake of argument, it still fails to teach the claim limitation because Labonte describes two fixed-location devices and the claim describes an action taken by a mobile station,

i.e., deciding whether to bid the access point based on the power backoff by the access point.

In the "Response to Arguments" at page 2 of the Final Office Action the Examiner states that "the Nakamura reference was not used to teach the [power attenuation consideration when bidding] limitation." That statement is directly contradicted by the Examiner's statement at page 7 of the Final Office Action that "therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to transmit perch channels which are used to calculate transmission attenuation as taught by Nakamura et al." That same statement is made by the Examiner in the previous OA dated July 8, 2008.

VIII. Conclusion

The rejections are improper for at least the reasons set forth above. Appellants accordingly request that the rejections be reversed and the application put forward for allowance.

Respectfully submitted,

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Appendix A - Claims

1. (previously presented) A radio control protocol for use by devices in a wireless communications environment wherein multiple channels are available for communication, comprising:

transmission of channel claim messages by ones of a plurality of fixed location wireless devices operable to provide network access, each channel claim message being indicative of an intent to utilize a channel for communications with associated mobile wireless terminal devices at some subsequent point in time, wherein each fixed location device uses the claim messages it sends and receives to select a channel on which to communicate;

transmission of presence announce messages by the fixed location devices, the announce messages being indicative of presence of the transmitting device, magnitude of intentional transmitter power attenuation by the transmitting device, and protocol capability of the transmitting device; and

an association auction including:

transmission of an association bid message from a mobile wireless terminal device to a particular fixed location device, the bid message being a request to communicate in the wireless communications environment via the particular fixed location device, and wherein a decision to send a bid message is based at least in-part on an indication that the receiving device is capable of providing better service as a function of magnitude of intentional transmitter power attenuation by the particular fixed location device; and

transmission of an accept message by the particular fixed location device in response to the bid message, the accept message indicating that the particular fixed location device will allow the wireless terminal device which transmitted the bid message to communicate in the wireless communications environment via the particular fixed location device, and wherein the particular fixed location device does not send an accept message to the wireless terminal device which transmitted the bid message if the particular fixed location device determines to not accept the request to associate.

2. (previously presented) The protocol of claim 1 further comprising:
exchange of registration request messages between devices, wherein a sending device sends a registration request message to a receiving device to indicate that the sending device desires to communicate in the wireless communications environment via the receiving device using the radio control protocol;
exchange of registration acknowledge messages between wireless devices, wherein a sending device sends a registration acknowledge message to a receiving device in response to a registration request message, to indicate that the sending device understands that the receiving device will communicate in the wireless communications environment using the radio control protocol.

3. (cancelled)

Appendix B - Evidence Submitted

None.

Appendix C - Related Proceedings

None.